

# Intelligent Subtle Forces and Fields Decide Human Performance: Jain Perspective–I

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In this article, emphasis is laid on the manifesting powers of the soul. The powers of the soul manifest as working intelligent force called here as faculties. Eight faculties are defined corresponding to eight types of karma. A schematic model of human system based on Jain principles and scientific findings is presented. The role of DNA and its inadequacies as physical force is discussed. It is stated that genes are only coding devices and the biological intelligence of the soul provides the information for design and structure of the body. The role of biophotons in regulating the biochemistry and biology of life is discussed. Scientific evidence suggests that biophotons originate from the coherent field in DNA. It is argued that the *karman* body exists as coherent field and the *karmanvarganas* shedding off the *karman* body form the biophotons. These biophotons have the information for the reactions to take place in cells. In this model, biophoton provides a link between the *karman* body and the gross physical body.

*Keywords:* soul, faculty, karma, DNA, biophoton, human performance

## Introduction

A living organism is not merely an integration of limbs and flesh, as assumed by science, but it is the abode of the soul. An organism is a living system consisting of three main sub-systems: the soul, the gross body, and the subtle body. All of these components have their particular properties, but they are interrelated in their functioning. In isolation, no component can completely describe the organism. The performance of the living system can be understood only through a holistic approach studying each component in relation to the other components. The reductionist approach of modern science, which studies the gross body alone, cannot provide information about all aspects of this system. Jainism follows an integrated approach and describes the organism as a system that yields complete knowledge of its working and performance. However, modern science has discovered many details of the gross body which are not available in the Jain scriptures; it is therefore desirable to study the information available in the Jain texts and scientific literature and correlate them to enhance our understanding of the behavior of the organism.

Traditionally, the main emphasis of Jainism is on liberating the soul. In this case, attention is focused on

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making the soul pure, implying manifesting the un-manifest powers of the soul. In the study of the worldly performance of the soul, it is important to know the powers of the soul that are manifesting. It is these powers which are available for working in the system. In this article, manifested powers are called faculties of the soul. Interplay of faculties with the gross body presents a real life situation that can be studied and compared with scientific findings. Only a small fraction of soul powers are manifested but that too is enough to support the biggest marvel of the world.

### **Soul in Jainism**

In Jain metaphysics, the universe is comprised of six kinds of substances. Two of them, *jiva* (soul) and *pudgala* (matter), are active substances. Soul is a sentient and matter is a non-sentient substance, and the two can combine according to defined rules. The soul is non-corporeal, living, eternal, and permanent substance of the cosmic universe, having the attribute of consciousness (*chetana*). Consciousness and *upayoga* (manifestation of consciousness) are the differentia of the soul. Consciousness is the generality of the attributes that distinguish the soul from the inanimate. Intelligence (*jnana*) and self-awareness or perception (*darshana*) are the two main manifestations of consciousness. Consciousness in worldly souls manifests itself in several ways: intelligence, awareness, bliss, perception (cognitive elements), emotions, will, attitude and behavior, and the awareness of pleasure and pain. Life and consciousness coexist: Wherever there is life, there is consciousness and vice versa. Soul and consciousness in Jainism refer to the same entity and each is meaningless without the other.

### **Doctrine of Karma**

The doctrine of karma is the law of causality for soul. It says that: (1) There is a consequence to each action of the soul; (2) the consequences are experienced by the same soul performing the activity; and (3) this processes of cause and effect is beginning less (Shastri, 1975). So, the soul has ever been bound with karma. Karmas are the impressions of the actions of the soul. The impression is the memory of the action, so the soul knows all of the actions performed in the past and in all previous lives. The information stored in this memory relates to worldly activities and is a hindrance to self-realization. This is why it is called an impurity that hides the real nature of the soul. There are two types of karma: *bhava* karma and *dravya* karma. *Bhava* karma is the impurity of the soul or impure consciousness, and is non-physical. *Bhava* karma constitutes ignorance, feelings of attachment and aversion, wrong faith, etc. in the mundane soul.

*Bhava* karmas have a physical counterpart, *dravya* karma, which is comprised of subtle matter called *karmanvargana*. The *dravya* karmas form a body known as *karman* or karma body. Thus, *dravya* karmas are the physical records of the past activities of the soul. There is a perfect balance and equilibrium between *bhava* and *dravya* karmas. This balance is dynamic in the sense that a change in one automatically makes a corresponding change in the other, satisfying the principle of parallelism between the *bhava* and *dravya* karma. It is because of *dravya* karma that the non-physical soul is able to perform physical acts.

### **Bonding of Karma**

A living being is always engaged in some kind of activity, either by the body, speech, and mind or some combination of the three. These actions and their accompanying passions—anger, ego, deceit, and greed—induce vibrations in the soul (*bhava* karma). The nature of this vibration depends on the type of action,

and the magnitude of the vibration depends on the degree of passion. Two things happen due to vibrations in the soul. First, the karma body vibrates because of the principle of parallelism between the *bhava* karma and the karma body. Second, the vibrating karma body attracts karma *varganas* from its surroundings. *Karmanvarganas* are a kind of subtle energy present throughout the cosmos. The incoming *karmanvarganas* bond with the existing karma and become part of the karma body. This karma carries the impression of and information about the source action. How long does this karma remain in the karma body? The karma is bonded for certain duration and is shed from the karma body on maturity after giving its fruits to the soul. The shedding of karma from the karma body is known as fruition of karma (*vipakaornirjara*).

The soul has innumerable *pradesa*<sup>1</sup>. Bonding takes place uniformly on all *pradesa*, so that at any instant each part of the karma body contains the same amount of karma, i.e., total information.

Jain philosophy describes eight main properties or attributes of the soul. Accordingly, there are eight main types of karma that obscure full manifestation of these natural properties<sup>2</sup>.

1. Intelligence (or the power of cognition)-obscuring (*jnanavaraniya*) karma. A pure soul has infinite intelligence; karma obscures and limits the pure and perfect intelligence of the soul. Intelligence is conceptual consciousness and is determinate.

2. Awareness or perception-obscuring (*darshanavaraniya*) karma. This karma restricts the soul's abilities of self-awareness and perception of objects and events. Awareness is non-conceptual consciousness and is indeterminate.

3. Feeling-producing (*vedaniya*) karma. A pure soul enjoys infinite bliss. This karma obscures this innate property of soul and produces feelings of pleasure and pain, depending on the situation. Feeling-producing karma is supported in its functioning by deluding karma.

4. Deluding (*mohaniya*) karma. A pure soul experiences the absolute truth and equanimity of conduct, but deluding karma hinders the perception of truth. This happens in two ways: First, the perception and comprehension are perverted, so that the truth is not apparent; and second, one's equanimity of conduct is obstructed. Very often the very existence of the soul is doubted or forgotten and all acts and efforts are directed towards the body.

5. Age-determining (*ayusya*) karma. A pure soul is ageless: It is never embodied. Age-determining karma determines the soul's embodied lifespan in a particular realm, viz., the animal, human, infernal or heavenly modes.

6. Form-producing or morphological (*naama*) karma. A pure soul is non-physical. This karma decides the form of the soul's existence in a particular realm and the relevant structure, outward appearance, etc. of the being. This concept is very general and applies to all kinds of forms, including all animals, plants, humans, infernal beings, and heavenly beings.

7. Status (quality)-determining (*gotra*) karma. A pure soul is free of class distinction. This karma refers to status of the soul at birth and the quality of body structure and body actions in a given mode, including the effects of inheritance from one's parents.

8. Vitality (or activity)-obstructing (*antaraya*) karma. A pure soul has infinite vitality. This karma produces an obstruction in the expression of the vitality of the soul and causes hindrances in its activities. The

<sup>1</sup> A *pradesa* is the smallest division of space, being equal to the space occupied by a *paramanu* which is the smallest indivisible fraction of matter, *pudgala*.

<sup>2</sup> Tattvartha Sutra, VIII/2.

form-producing, status-determining, and feeling-producing karmas are the auxiliary causes that support the action of this karma.

The karmas are divided into two groups, *ghatin* and *aghatin*, depending on the influence they have on the soul. The former destroys the basic nature of the soul; the latter does not. The *aghatin* karmas embody the soul and determine the physical structure of the organism and its operation; the *ghatin* karmas determine its psychical performance. The two groups are:

1. Psychical (*ghatin*) karma. These karmas affect the psyche and inhibit or destroy the fundamental nature of the soul. The intelligence-obscuring, awareness-obscuring, deluding, and vitality-obstructing karmas belong to this group. These karmas limit the manifestation of the psychical powers of the soul and are the cause of our imperfection.

2. Biological (*aghatin*) karma. These karmas concern with the existence of the physical body and do not cause any harm to the fundamental character of the soul. This group includes feeling-producing karma, morphological karma, status-determining karma, and age-determining karma. These karmas keep the soul embodied but allow manifestation of the natural psychical powers of the soul when the psychical karmas have been eliminated.

The psychical karmas may obscure the nature of the soul either fully or partially. However, it may be mentioned that the fundamental quality of the soul is never fully obscured. If that were the case, the soul would lose its basic character and become as good as an inanimate object. Even the densest and darkest cloud cannot completely obscure the sun; in the same way, no amount of karma can obscure the total abilities and powers of the soul.

### Effects of Karma

Karmas show their effect on soul on expiry of the maturity period fixed at the time of bonding, or earlier in special cases. There is some difference in the way the psychical karma and biological karma exercise their influence. The psychical karmas shield the powers of the soul. The powers of the soul are expressed to the extent the shield is weakened. The shield can be weakened by annihilation of karma, *ksaya*, subsidence of karma, *upasama*, or by partial annihilation and partial subsidence of karma, *ksayopasama*<sup>3</sup>. The darker the karma shields, the less powers of the soul are expressed. In case, any karma is on rise expression of that power is suspended for the time being temporarily. Our cognition ability, perception, knowing of truth, conduct, behavior, level of mental, verbal, and physical activities, all have the limitations imposed by karma. These activities are perfect only when all the psychical karmas are eliminated.

The biological powers of the soul are expressed on fruition of biological karmas. These powers determine the biological structure in the form of gross body and subtle structure like mind. The fruition of karma is associated with activity, mental, verbal, or physical; one or more activities may take place at a time. These activities, technically known as yoga in Jainism, are also generally accompanied by passions. Mental activities exist as thought processes, memory recall and interaction with the senses. Verbal action may be spoken words, murmuring, mental recitation or speaking activity in some form. Physical action can be motor actions or the movement of limbs and body parts, or biological process taking place in the body. The activities of the *taijas* body also constitute physical actions.

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<sup>3</sup> Ibid, II/1.

### Faculties of the Soul

The manifested power of the soul is the working force in the living system. For instance, manifested *jnana* is the knowing intelligence of the soul and manifested *darshana* is its perceiving intelligence. These manifested powers of the soul are karma dependent (Kachhara, 2020) and constitute the force that works in the physical body of the organism. This working intelligent physical force is called faculty of the soul (Kachhara, 2018).

There are eight faculties of the worldly soul, corresponding to the eight fundamental qualities of the soul. These faculties are:

1. Faculty of knowing. The greater is the *jnanavaraniya* karma shield, the less is the faculty of knowing and the cognition ability of the soul. By this faculty, the soul acquires knowledge of objects and events.

2. Faculty of awareness or perception. The greater is the *darsanavaraniya* karma shield, the more limited is the faculty of perception and vice versa. By this faculty, the soul becomes aware of the self and of the environment.

3. Faculty of truth and conduct. This faculty is divided in two parts based on two sub divisions of *mohaniya* karma.

a. Faculty of truth. There is false perception due to shield of *darshanamohaniya* karma. The soul is not able to know the truth.

b. Faculty of conduct. The soul engages in imperfect practice due to shield of *charitramohaniya* karma. The soul is not able to practice free of passions, emotions, and desires. Its conduct is guided by desires and passions, and such conduct is at variance with the real nature of the soul.

When the shield of *darshanmohaniya* karma is eliminated, the soul has the right perception and right knowledge about the right conduct. By practicing the right conduct the soul can attain equanimity of conduct.

4. Faculty of power of activity. The shield of *antaraya* karma determines the level of mental, verbal, and physical activities. When *antaraya* karmas are on rise, the soul lacks power of such activities.

5. Faculty of biological intelligence. This faculty provides the intelligent physical force for designing and creating the body structure of the organism, just like an artist conceives and creates a painting, on fruition of *naam* karma. This faculty is the force and intelligence behind the formation of organisms and their body structures.

6. Faculty of quality. This faculty controls the quality of both the structure and actions of the organism on fruition of *gotra* karma. When high *gotra* karma is on fruition, the organism's quality and performance is high; when low *gotra* karma is on fruition, the quality and performance is low.

7. Faculty of feeling. The soul experiences pleasure on fruition of *satavedaniya* karma and pain on fruition of *asatavedaniya* karma

8. Faculty of life force. This faculty provides the life force, *prana*, essential for the living being, on fruition of *ayusya* karma, and this force exists as long as *ayusya* karma is in balance. Without this faculty, life in the organism is not possible.

All eight faculties work together and jointly determine the personality and performance of the worldly soul. The eight faculties, their subtypes and grades, defined by divisions similar to those of karma, combine in a very large number, perhaps infinite, of ways so that each soul is unique in practice.

We can divide the faculties into two groups, based on two divisions of karma.

1. Psychical faculties. These faculties concern the psychical performance of the soul. These include the faculty of knowing, faculty of awareness, faculty of truth and conduct, and the faculty of power of activity.

These faculties are expressed externally and can be measured if suitable ways can be devised. They operate through the mind, which interacts with the gross body (through brain). When the psychological karmas are eliminated, these faculties cease to exist and the natural qualities of the soul that were obscured by these karmas manifest in their true form.

2. Biological faculties. These faculties concern the biological and physiological structure and functions of the empirical soul. They include the faculty of feeling, faculty of life force, faculty of biological intelligence, and the faculty of quality. These faculties are internal and we are not consciously aware of them. They work on an involuntary basis and are not subject to control of mind. These faculties remain in existence even after the psychological karmas are eliminated. They cease to exist on liberation.

### ***Taijas* (Electric) Body**

*Taijas* body is another subtle body possessed by every organism. This body is the source of *prana* which is essential for life in the gross body. The *taijas* body, comprised of *taijasvargana*, is supposed to be electric or energy body. The *taijas* body has two important functions: (1) management of the body systems; and (2) support and control of the physical body (Mahaprajna, 2013). The karma body and the *taijas* body never depart: Both of them are always united with the soul in the mundane state and migrate with the soul from one birth to the next birth. This union is maintained until the soul attains the state of emancipation. The *taijas* body is like a bank of *prana*, and the life span of this bank is decided by *ayusya* karma. The bank has a continuous input of *taijasvargana* from the cosmos, drawn in by *ayusyaprana*, and supplies *pranas* to the various sense organs and for functioning of the body, mind, and speech, and respiration system (these are known as vital powers). The *taijas* body stops supply of *prana* on exhaustion of *ayusya* karma and life ends.

### **Lesya**

*Lesya* is an important concept in Jainism. *Lesya* defines our inner personality determined by overall effect of *bhava* karma on the soul. *Lesya* consists of our *bhava* and feelings. *Bhava* is disposition of the soul determined by the effect of active psychological karma. *Bhava* represents our inner emotions, passions, and desires. The *lesyas* comprising of *bhava* and feelings are expressed without the help of mind, i.e., mind has no role in their expression. There are *bhavalesyas* and *dravyalesyas*, a kind of radiation or emission. *Dravyalesyas* exhibit colour on interaction with *taijas* body. *Lesyas* have been classified on the basis of colour. There are six main types: black, blue, grey, red, yellow, and white. Each of these identifies a particular kind of personality, the first three are malevolent *lesyas* and the last three are benevolent *lesyas*, referring to bad and good personalities respectively. Person with black *lesya* has the worst kind of personality and that with white *lesya* has the best kind of personality.

According to Acharya Mahaprajna (2001), *lesyas* in human body system interact with the endocrine glands and influence secretion of hormones. Hormones are known to relate to our emotions and, therefore, it is logical to assume a relationship between *lesya* and endocrine glands. Hormones mix with blood and reach the nervous system and brain influencing our emotions, thoughts, attitude, speech, conduct, and behavior. Thus, *lesyas* determine our psychological personality and traits. *Lesyas* change with time and only one *lesya* is present at a time. Although *lesyas* act independent of mind, they influence the mind through its interaction with brain.

The soul experiences vibrations under the influence of *bhava* karma. These vibrations are known as *adhyvasaya*. *Adhyvasaya* bear the characteristics of the state of the soul influenced by the active karmas. The *adhyvasaya* induces similar vibrations in the *karman* body.

## Mind

Mind in Jainism is not like physical sense organs it is a subtle unit. The consciousness of the soul flows out through mind. Mind exists as long as there is flow of consciousness (Mahaprajna, 2001). There are two types of minds, *bhava* mind and *dravya* mind. *Bhava* mind, part of the soul, thinks and imagines due to the power of the soul. *Dravya* mind is physical and is made up of subtle *manovargana*. *Dravya* mind interacts with senses and the external environment and thereby influences the *bhava* mind and the soul. *Dravya* mind establishes a relation between the soul and the body, and also the external environment. This relationship continues as long as *dravya* mind exists, the relationship ends when the mind ceases to exist, on elimination of psychical *bhava* karma.

Mind is instrument of knowing, perceiving, and cognizing. In this function, mind works with senses. The sensations made by the sense organs are passed on to brain and mind, which then responds. This is the way of knowing the external objects. Mind perceives the object, identifies it, and stores its memory. The scope of knowledge by senses is limited to perception of the material world but mind can perceive and think of both the visible and the invisible objects and substances. Both senses and mind are engaged in the process of empirical knowledge (*matijnana*) but articulate knowledge (*shrutajnana*) is the subject of mind only. Mind has memory and operates in three periods of time; remembers the past, thinks of present, and imagines the future.

The activity of mind goes on continuously because of the stored memories and the actions of desires, emotions, and passions. Mind is influenced by our *bhava* and remains active as long as *bhava* exist. The mind can be stopped only when these activities are stopped, as happens during deep meditation, or when *bhava* are eliminated. Mind has three aspects: (i) cognition aspect; (ii) *bhava* aspect; and (iii) activity aspect, activity of mind, body and speech. Normally the three aspects work jointly.

Distinction is made between mind and intellect (*buddhi*). Mind is assisted by senses in its working and intellect is assisted by mind. Mind is influenced by external conditions but intellect is not influenced. Mind only surveys and analyzes the situation; intellect takes decision and is the source of knowledge generation.

It is obvious from above that the four psychical faculties operate through the mind. So, mind is a very important unit in understanding the life system.

### A Schematic Model of Human Being

We now present a simple schematic model of a human being combining the knowledge of Jain tradition and the knowledge of the material body obtained by modern science. Referring to Figure 1, the soul is divided in two parts, the pure soul S in light band and *bhava* karma BK in dark band. *Bhava* karma is also divided in two parts of psychical karma (*ghatin*) and biological karma (*aghatin*). In the same way, *dravya* karma DK is also shown to have two similar parts. Vibrations in *bhava* karma, *adhyvasaya*, induce similar vibrations in *dravya* karma of both categories. T represents the *taijas* body and M represents the mind. All these units occupy the space of the gross body GB and extend the same space. This means that all karma, *taijasvargana* and mind are present at every point space of the body.

The four psychical Faculties 1, 2, 3, and 4 interact with mind, and mind and brain mutually interact with each other. Mind and brain together transform the powers of these four faculties into action. They jointly perform: (a) cognition and perception functions and the acts of thinking, imagining, planning, memory, and taking decisions; (b) the act of knowing truth about any object or event, experiencing pleasure and pain, passions, emotions, desires and drives, and determining behaviour and conduct; and (c) activities of mind, body and speech as per (a) and (b) and the Faculty 4.

The three biological Faculties 5, 6, and 7 interact directly with the gross body. The gross body has trillions of cells. The interaction takes place with each cell of the body. The faculty of biological intelligence 5 is supposed to interact with DNA which is known to be instrumental in producing the body structure and features, like aesthetic appearance, practices of penance, study and scholarship, glory and physical gains. The faculty of quality 6 may also interact with DNA to regulate the quality of genes and other aspects of the body. The faculty of feeling 7 is cause of sensing pleasure and pain and so may relate to such processes in the body which are related to this sensing function. The faculty of life force 8 interacts with *taijas* body. *Taijas* body draws in *taijasvargana* from cosmos and supplies this energy as *prana* to every cell of the body.

*Dravyalesya* from psychological karma and biological karma interact with *taijas* body, and finally with the endocrine glands in the gross body. The hormones secreted by glands influence the brain which interacts with mind. Thus mind is also influenced by *lesya* indirectly.

Note that all the physical existences have their counterpart in the soul. Physical existence of life is impossible without soul.

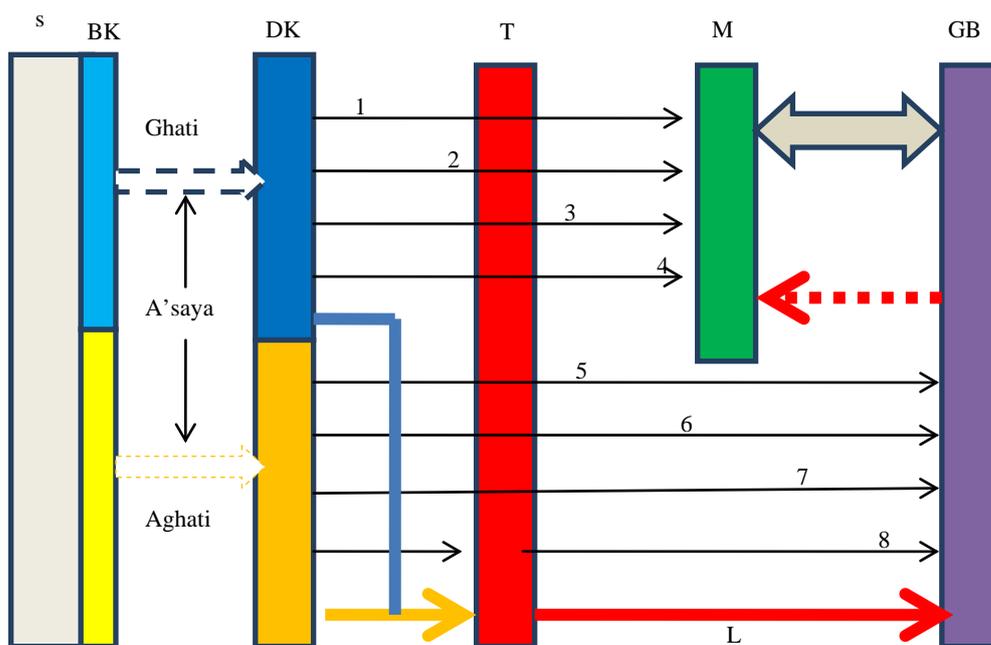


Figure 1. Schematic model of human system.

Notes. S = soul, BK = bhava karma, DK = dravya Karma, T = taijas body, M = mind (dravyamanah), GB = gross body, A'saya = adhyavasaya

1 = Faculty of knowing (due to kspm or ksa of Jnanavarniya karma)

2 = Faculty of awareness or perception (due to kspm or ksa of Darshanavarniya karma)

3 = Faculty of truth and conduct (due to kspm, upsm or ksa of Mohaniya karma)

4 = Faculty of power of activity (due to kspm or ksa of Antaraya karma)

5 = Faculty of biological intelligence (due to fruition of Naam karma)

6 = Faculty of quality (due to fruition of Gotra karma)

7 = Faculty of feeling (due to fruition of Vedniya karma)

8 = Faculty of life force (due to fruition of Ayu karma)

L = Lesya (Interact with endocrine glands. Secretion of hormones influences the mind)

Kspm = ksayopasama (subsidence-cum-annihilation of karma), upsm = upasama (subsidence of karma), ksa = ksaya (annihilation of karma)

### **DNA and Genes**

Now, we examine the scientific view of life. The cell is the fundamental structural and functional unit of all living organisms. The nucleus of a cell contains a chemical DNA which is supposed to carry all the instructions needed to direct the activities of cell. DNA in the human genome is arranged into 24 distinct chromosomes, each chromosome contains about 3,000 genes. Genes are now known to be implemented as sequences of genetic code that direct specific cells to produce a particular protein at a particular time. The genetic code has been compared to a blueprint specifying the design of an organism. The genetic code specifies not only the design of the organism but provides for the mechanisms needed to “read” the code and manufacture the components of the organism as well as specifying the procedures needed for life processes of the finished organism. Life begins with the union of two cells, the egg from the mother and the sperm from the father. This new cell known as zygote carries the material that forms 24 chromosomes.

Although all the somatic cells in an organism contain the complete code, in any given cell, only a relatively few genes are active. The difference in the genes that are active determines the difference between, say, liver, and brain cells. Complex gene logic determines when and where a particular gene will be “turned on”. The gene logic can accommodate varying amounts of positional detail. The gene logic also controls when various activities will take place. A gene can produce more or less proteins in different cells at various times in response to developmental or environmental cues, and many proteins can express disparate functions in various biological contexts. Most genes contain a switch called promoter. This switch regulates the activities of the gene and decides when and how the gene should become or not become active. An enhancer also works in the gene. The promoter and enhancer work only when the transcription factors responsible for mutation are operating. The genes are our active partners and are sensitive to the changes taking place in our body and mind (brain) and they register these changes by making suitable changes in their structure. By channeling our thoughts in a specific direction the genes can be changed, thus enabling us to progress in a desired way.

Studies in behavioral genetics have shown that both genetic and environmental factors influence the normal and deviant behavior of human beings. Intelligence and memory, novelty seeking and activity level, and shyness and sociability all show some degree of genetic influence. Faulty genes in chromosomes have been found to lead to different diseases.

### **Inadequacy of DNA as Physical Force**

There are examples of biologists finding physical forces inadequate to explain physiological processes, leading them to speculate about the presence of some hidden intelligent force that produces biological structures. Some scientific findings corroborate the existence of karma-like forces to explain the processes taking place in cells.

The idea of the morphogenetic field was proposed in the 1920s (Gurwitsch, 1944). “This field was defined as a collection of cells that are able to respond to discrete, localized biochemical signals leading to the development of specific morphological structures or organs”. These fields have definite boundaries, and the organ will form only from the interactions of cells within the field. The cells within this field could regulate the formation of structures.

Rupert Sheldrake (1987) proposed that there is a field within and around a morphic unit that organizes its characteristic structure and patterns of activity. He writes that

we know what DNA does: it codes for the sequence of amino acids, which form proteins. However, there is a big difference between coding for the structure of a protein and programming the development of an entire organism. It is the difference between making bricks and building a house out of the bricks. You need the bricks to build the house. If you have defective bricks, the house will be defective. But the plan of the house is not contained in the bricks, or the wires, or the beams, or the cement. Analogously, DNA only codes for the materials from which the body is constructed: the enzymes, the structural proteins, and so forth. There is no evidence that it also codes for the plan, the cells of the body. DNA alone cannot explain the difference in form; something else is necessary to explain it.

Shedrake defines morphic field(s) as “fields of information”, “non-material regions of influence extending in space and continuing in time. They are localized within and around the systems they organize”. They disappear with the system they organize, but it can appear again physically in other times and places, whenever and wherever conditions are appropriate. When they do so, they contain within themselves a memory of their physical existences [1988].

Guenter Albrecht-Buehler (n.d.) claimed that 30 years of his research on the cell has shown that mammalian cells possess intelligence. “An intelligent cell contains a compartment that is capable of collecting and integrating a variety of physically different and unforeseeable signals as the basis of problem-solving decisions”. Purucker (1973) wrote about life atoms, centrosomes, and centrioles many years ago. He stated, “In each cell there is a central *pranic* nucleus which is the life-germ of a life-atom, and all the rest of the cell is merely the carpentry of the cell built around it by the forces flowing forth from the heart of this life-atom”. A life-atom is a consciousness-point.

The above researches point to the fact that genes are only codes and do not carry the information for structure building. From information theory, we know that information is different from the code that carries the information. If genes are codes information must be different from it. Information is product of intelligence, and the genes are ultimately made up of atoms and molecules which have no intelligence. “Where this information is” is a big question. The idea of morphogenetic field lacks biological basis for its assumption. According to Jain philosophy, the faculty of biological intelligence has the information for the design of the organism and it also contains all the instructions for formation of parts and organs of the body. So, is it not that the information from faculty of biological intelligence is used by genes to perform the cell functions, and for coordination between all cells for the structure and operation of the body? Question still remains how genes make use this information? We shall revert back to this question later.

### **Biopotential (*Paryapti*)**

It may be noted the soul enters the first cell, the zygote according to Jainism, and new life begins. The soul entering this cell has *karman* body and *taijas* body with it and the *karman* body carries information of all the eight faculties. The zygote presently has the *karman* body and *taijas* body of the mother. So, there has to be exchange of these two bodies before the processes of new life begin. The concept of biopotential described in Jainism explains this transfer process.

Biopotential is the power of biological development of the soul. Biopotentials are of six kinds (Nemichandra, 2000):

1. Food biopotential—This enables the soul to receive “food”.
2. Body biopotential—This enables the soul to construct the body.
3. Sense organ biopotential—By this power, the sense organs are formed.
4. Respiration biopotential—By this power, the respiration system is formed.
5. Speech biopotential—By this power, the speech system is formed.

6. Mind biopotential—By this power, the mind is formed.

The biopotential powers are developed in the very first stage of starting of life. All biopotential powers develop simultaneously, the process is fast and it is completed in few minutes (less than 48 minutes). The food biopotential is completed first. It means that the zygote is first transferred from the mother's body to the new incoming soul. In the next step, the *karman* body and *taijas* body of the zygote are exchanged, i.e., the *karman* body and *taijas* body of the mother are replaced by *karman* body and *taijas* body of the incoming soul. If this process of handing over and taking over is completed successfully, then the zygote forms the initial body of the new soul. There is change of management and further development of body now proceeds according to the karma of this soul. The mother's body however continues to supply nourishment to the new soul in the womb.

### Biophotons

We now describe an important discovery of biophotons. It is now well established that all living systems emit a weak light current of some photons. Scientists found that the nature of this, weak light emitted by living cells is different from the sunlight, and called these light photons as biophotons. The pioneering work done by Fritz-Albert Popp and his fellow scientists has given a deep insight into the phenomenon of biophoton emission (Popp, 1992). According to him, the purely molecular aspect of life sciences may be only one necessary step in understanding biology and can never reach the significance of sufficient and complete explanation. Molecules have no intelligence, despite the manifold impressive functions that have been assigned to them. Even the enzymes or messenger molecules have to be triggered by external energy, i.e., photons which activate the diversion transition state complexes. These activation energies cover the whole electromagnetic spectrum. The non-thermal photons provide the right quantum energies at the right place and right time for the millions of reactions taking place per second per cell. Different parts of body emit biophotons with intensities ranging from 10 to 100 counts per second. A rough estimate shows that even a few photons can provide the activation energy to all the biochemical reactions which take place in a cell. Thus, one has to stress that: (1) It is impossible that thermal photons may trigger the biochemical reactions in a living system; and (2) theoretically only one photon per cell could be sufficient for activating  $10^9$  reactions per second, provided that it originates from a coherent photon field. If this field is coherent and non-thermal one, it is theoretically able to borrow the photon energy at the right time and take it to the right position of the reaction and to reabsorb it immediately after this event which, in general, takes no longer than about  $10^{-9}$  seconds. Biophotons may well suffice to take the role of regulating the whole biochemistry and biology of life. An increasing number of observations from different laboratories all over the world suggest that biophotons are emitted from a coherent photon field within the living system. What are the consequences of coherence? It results in properties that are characteristic of biological systems. These include the high efficiency of energy transfer and transformation which often approaches 100%; the ability of communication at all levels within cells, between cells and between organisms capable of resonating to the same frequencies; the possibility for sensitive, multiple recognition systems utilizing coherent electromagnetic signals of different specific frequencies, such as, for example, the organization of metabolic activities within the cell, the operation of the immune network and a host of other biological functions involving specific recognition between hormones or ligands and their receptors; and finally, the stable persistence of the working system arising from the inherent stability of coherent states.

The biophoton emission is indicative of an endogenous, innate, electromagnetic field pervading the entire organism, which may act as both sender and receiver of the biophoton that are "electromagnetic

bio-information” used in regulating life processes. These observations, among others, suggest control within the living state and possibly electromagnetic in nature. Many significant correlations between features of the weak biological light and a number of fundamental biological processes, such as cell division, death, and major shifts in metabolism, exist. These correlations may indicate that the light (electromagnetic field of the organism) is a sensitive expression of biological regulating processes.

The source of biophoton is hoped to be mysterious “source of livingness” (Lipkind, 1998). According to modern biophoton theory, DNA is that source and the biophoton emission originates from the coherent field within this source. It seems that coherence means the ideas of orderliness and coordination themselves, but does not sense as a principle giving their “explanation”. Hence, there is an “explanatory gap” between the physically defined coherence and its biological counterpart. The concept of coherence has no immediate value unless it is provided with additional postulation concerning biological specificity. Despite the proof of coherence of biophoton emission, there is still a lot of disputation on questions of source(s), the mechanism, the actual degree of coherence and the biological significance of biophoton emission (Popp & Chang, 1998).

### **Examination of Scientific Evidences in Jain Perspective**

It was mentioned earlier that faculty of biological intelligence could be the source of information for genes to perform the life functions. According to biophoton theory, reactions in a cell are triggered by biophotons. This is an intelligent action. The big question in this theory is about the source of the coherent field, which is electromagnetic in nature and pervades the entire organism that emits biophotons.

In the Jain system, we have two subtle bodies, the *karman* body and the *taijas* body. Do these bodies exist as coherent fields? Both these bodies are made up of subtle *varganas* which have been said to be subtle kind of electromagnetic fields (Kachhara, 2011). Is the *karman* body field coherent? We know that *karman* body stores enormous amount of information records of activities of this life as well as of past lives. The total information is supposed to be present at every space point of the *karman* body. How this becomes possible? Scientific knowledge shows that a hologram can store large amount of information, one cubic centimeter of holographic film can hold as many as 10 billion bits of information. A hologram is capable of encoding and decoding frequencies; a function that is performed by the *karman* body. One is tempted to believe that it is because of the holographic memory that the *karman* body is able to store such a large amount of information. So, it is reasonable to assume that *karman* body is electromagnetic of subtle kind and exists as a coherent field.

*Taijas* body is electric in nature and it manages the body system and supports and controls the physical body. The *karman* body and *taijas* body have always been existing together ever since and it is unlikely that one is coherent and the other is not. This is valid reason for assuming the *taijas* body field also to be coherent as only coherent field can ensure orderliness and coordination in the system, which is observed in all organisms.<sup>4</sup>

But before we accept the above theory, it has to be explained how biophotons are produced from the *karman* body field. It is only possible to speculate and hypothesize on what happens in the realm of the subtle

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<sup>4</sup> Some evidence to support the theory of coherent field can be found in yogic experiences. Pt. Sriram Sharma had the power to see the structure of body. He says that the nucleus of cell is a spot of light like a star. Goshalak attacked Mahavira with *tejolesya* by which the body of Mahavira suffered heavy burns. Shiva used his third eye, Ajna Chakra, to set Kamadeva to fire. In both these cases the burns and fire were possibly caused by laser like rays which must have originated from the *taijas* body. This implies that *taijas* body is coherent.

bodies. But logical arguments lead us to reasonably convincing position. The fields of two subtle bodies are present at every space point of the gross body. The soul and hence the *karman* body and the *taijas* body has innumerable *pradesa*. The gross body has trillions of cells and so that there are multiple space points of *karman* body and *taijas* body for every cell. What happens when karma gets fruition? The karma in passive state is at rest and does not affect the soul. In fruition state the karma vibrates, leaves the *karman* body and influences the soul. It is known that when karma bonds the infinite number of *karmanvarganas* bind with the soul at a time, i.e., a particular karma contains very large number of *karmanvarganas*. So, on fruition of karma, an equally large number of *karmanvarganas* are released. The released *varganas* must aggregate to form a bigger *vargana* locally. In the Gommattara system of 23 *varganas*, the *karmanvargana* is 13th in order and the *pratyeksarivargana* is 17th in order of increasing size. The later *vargana* has been compared with light photon (Kachhara, 2011). So, it is expected that photon is produced by aggregation of released *karmanvarganas*. Photon so produced has the characteristic of karma in fruition, i.e., it has the particular information content. As fruition is a continuous process, photons are continuously produced in a cell. As the *karman* field and *taijas* field are overlapping on the same point, a vibration in one is expected to cause vibration in the other field also by resonance effect. So, it is expected that *taijasvarganas* are also released from the *taijas* body on fruition of karma. As per the function of *taijas* body these released *taijasvarganas* may work as binding agent to aggregate the released *karmanvarganas* into a photon. When this photon triggers a reaction, it has the information and knows what to do, and, in this way, biophotons are able to control the biochemistry and the life processes.

The above explanation makes us believe that *karman* body, perhaps in combination with the *taijas* body, is the coherent field scientists are referring to. The emission of biophoton in this case is a biological principle as the *karman* body is attached to the soul. This also resolves the question that unless biophotons have biological origin they are not expected to act intelligently. In the Jain system, biophotons are guided by the faculty of biological intelligence.

Figure 2 shows biophoton emission in the gross body. Biophotons produced in a cell are also distributed to other cells of the body. So, in a given cell, there are biophotons produced in that cell as well as those received from other cells. These biophotons together have the information for the reactions to take place in the local cell, to meet the needs of this cell as well as the needs of the body. Thus, the body functions in a coordinated way.

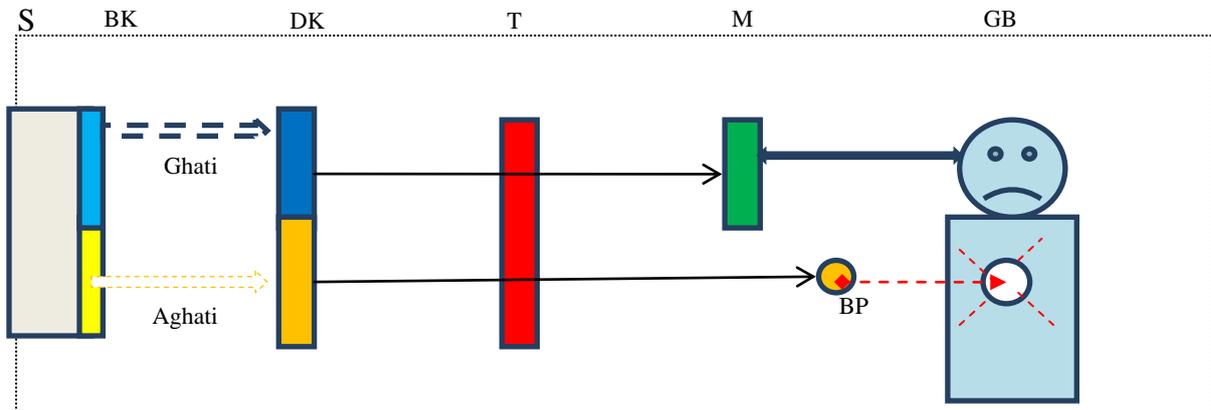


Figure 2. Biophoton production in cell.

Notes. White spot in the gross body is a cell. Biophoton BP is produced in the cell, shown outside for clarity. Biophotons are also received from other cells, and these together control the reactions in this cell.

If the above hypothesis is accepted, it would herald a new era in science. Study of soul now becomes part of science which hitherto is confined to study of matter. The domain of matter is also extended to include matter subtler than photon. It is the subtle form of matter that plays the most important role in the structure and performance of organisms. By accepting existence of soul many of the problems regarding understanding consciousness, feelings, emotions, experiences, behavior, etc. are also resolved. It would also be a landmark in the history of Jainism as it reveals how connection is made between the soul and the body. There is an extra link of photon between the subtle bodies and the gross body. As extensive study on biophoton has been made and this knowledge would enable to see how biological intelligence is actually working in the body.

Now, we examine the role of DNA. It is evident that DNA is not performing any intelligent act by itself; this role is assigned to biophotons. In fact, all intelligent processes are taking place at subtle level. The biophoton action is termination of intelligent action in the body; all processes at levels higher than photon are directed by information contained in photons. The genes are like templates that are used to produce different kinds of proteins in cells. The directions for processes taking place in organs and parts of the body, formed by structural arrangements of cells, also originate at subtle level of karma. The faculties of soul are the intelligent working force that control and regulate the life processes at gross level.

We now have a scientific understanding of the Jain principles. We have believed in these principles as a matter of faith, but now there is scientific basis to understand how the principles work in practice. This is only beginning and lot more is to be done to understand how different karmas are working and controlling various biological functions. This would enhance our understanding and establish Jain philosophy as a scientific principle.

Biological karma and biophotons explain design and structure of the gross body. The psychical performance of the organism is decided by psychical karmas and mind. This aspect of life shall be the subject of second part of the paper to be published.

### Conclusions

The manifested powers of the soul provide intelligence for working of the life system. The powers manifesting are karma related. The eight types of karma and their effects on the soul are described. Faculties of the soul are working intelligent physical force and are defined with respect to eight types of karma. The role of *taijas* body, *lesya*, and mind is briefly described. A schematic model of the human system showing connections between the soul, karma, *taijas* body, mind, and gross body is presented. The model also shows interaction of *lesya* with other components of the system.

In the scientific exposition, DNA codes instructions needed to direct the activities of cell. The genetic code has the information for design of the organism and for life processes of the finished organism. But this theory has been questioned by some scientists, like Rupert Sheldrake, Guenter Albrecht-Buehler, G. de. Purucker, et al. They are of the view that DNA is only a code and the source of intelligence is to be found elsewhere.

The discovery of biophotons and their role in regulating the biochemistry and biology of life is discussed. Evidence suggests that biophotons originate from a coherent electromagnetic field in DNA. Some scientists are of the view that concept of coherence has no immediate value unless it is provided with additional postulation concerning its biological specificity.

It is argued that the *karman* body must exist as coherent field so that it stores a large amount of information, just like a hologram. The *taijas* body which always accompanies the *karman* body should also be

in the same form. It is shown that the shedding *karmanvarganas* form the biophoton in DNA, and the biophoton so formed carries the information of the shedding karma. The intelligent action supposed to be performed by DNA is because of the intelligence of the shedding karma transmitted through biophoton. Ultimately, the biological faculties of the soul have the intelligence and information to design and form the body of an organism.

The above hypothesis provides the missing biological principle to the concept of coherence. It also establishes a link between the *karman* body and the gross body for complete explanation of working of the karma system.

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